

Generative AI and Design Thinking in Regional Tourism Branding: A Systematic Framework Based on the Double Diamond Model

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Abstract:

Regional branding faces the dual challenge of homogenization and the need for digital transformation in the context of global cultural tourism integration. Traditional visual identity systems often lack emotional depth and adaptability across modern media channels. This study aims to construct a systematic visual design framework for regional tourism brands by bridging the gap between cultural heritage resources and modern visual communication. Using the “Henan Brand Project” as a case study, we combined SWOT analysis with the Double Diamond model to diagnose visual deficits and propose a novel “Six-Element Path Model” comprising symbolic translation, data-driven insight, modular design, emotional narrative, co-creative feedback, and transmedia storytelling. Furthermore, we explored a human-AI collaborative mechanism to enhance design efficiency during the insight and ideation phases. The application of this model successfully guided the development of a modular visual system, including culturally representative IP characters and adaptable visual modules. The results demonstrate that the proposed system achieves improved cross-media adaptability and stronger emotional resonance with younger demographics compared to traditional methods. This research provides a replicable theoretical framework for revitalizing regional cultural heritage through systematic design thinking and AI technology.

Keywords:

Regional Tourism Branding, Visual Identity System, Double Diamond Model, Generative AI, Cultural Heritage, Transmedia Storytelling

1. Introduction

In the era of digital globalization, the integration of culture and tourism has become a key driver for regional economic development. However, regional tourism brands often face the challenge of homogenization, where visual identities lack distinctiveness and emotional resonance. The core issue lies in transforming profound

cultural resources into comprehensible and attractive visual symbols for modern audiences, particularly the younger generation. [1]

Previous studies have explored destination branding from various perspectives. Cai (2002) proposed a cooperative branding model, emphasizing the consistency of visual logos across stakeholders. Campelo et al. (2014) introduced the concept of “Sense of Place,” suggesting that visual communication should incorporate elements of landscape and ancestry to enhance emotional experiences. Furthermore, successful cases like Japan’s “Kumamon” demonstrate that character-based IP (Intellectual Property) design can significantly boost regional tourism revenue. [2] Despite these theoretical advancements, there is a lack of systematic frameworks that guide the entire design process from cultural extraction to cross-media application, especially in the context of the emerging Artificial Intelligence (AI) technology.

This study addresses this gap by proposing a systematic visual design framework based on the “Double Diamond” design process. Taking the “Henan Brand Project” (a major cultural tourism initiative in central China) as a case study, we construct a “Six-Element Path Model” that integrates symbolic translation, data-driven insights, and modular design. [3] Furthermore, we explore the potential of Generative AI in enhancing design efficiency and creativity. This research aims to provide a replicable solution for revitalizing cultural heritage through systematic visual design.

2. Materials and Methods

2.1. Theoretical Framework

The Double Diamond Model This study adopts the Double Diamond design process developed by the UK Design Council as the overarching methodological framework. This model maps the divergent and convergent thinking processes into four distinct phases: Discover, Define, Develop, and Deliver.

Discover Phase (Divergence): We utilized SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats) to comprehensively diagnose the current status of the “Henan Brand Project.” This involved collecting policy documents, analyzing tourism resource distribution, and identifying gaps in the existing visual identity .

Define Phase (Convergence): Based on the research findings, we synthesized the core problem: the lack of a unified, emotionally resonant visual system. We employed Data-Driven Insights to refine user personas and consumption behaviors, ensuring the design strategy aligns with market demands .

Develop Phase (Divergence): This phase focused on ideation through Symbolic Translation and Modular Design.[4] We applied semiotic theories to deconstruct cultural artifacts into visual symbols and tested various combinations.

Deliver Phase (Convergence): The final solutions were consolidated into a Transmedia Storytelling system, ensuring consistency across physical and digital touchpoints .

2.2. Construction of the Six-Element Path Model

To address the specific challenges of regional branding, we expanded the Double Diamond model into a specialized “Six-Element Path Model.” The methodologies for each element are as follows:

Symbolic Translation: Grounded in Saussure's semiotics, this method involves extracting "signifiers" (visual forms) from cultural "signifieds" (meanings). We conducted a "competitor symbol scan" and "regional culture excavation" (e.g., extracting motifs from the Shaolin Temple and Yellow River culture) to create a library of culturally representative symbols.

Data-Driven Insight: We integrated quantitative data (tourist statistics, social media trends) with qualitative analysis (user feedback) to drive design decisions, moving beyond subjective aesthetic judgments .

Emotional Narrative: Drawing on Donald Norman's Three Levels of Emotional Design (Visceral, Behavioral, Reflective), we structured the brand narrative to trigger immediate sensory attraction, facilitate interactive experiences, and foster long-term cultural identification .

Modular Design: We adopted a systemic approach to decompose visual elements (colors, patterns, icons) into standardized modules. This allows for flexible recombination to suit various media formats, similar to the modular system used in the 2022 Beijing Winter Olympics. [5]

Co-creative Feedback: A multi-stakeholder mechanism was established, involving government officials, designers, and the public. We utilized surveys and focus groups to gather feedback, creating a "Design-Feedback-Optimize" closed loop.

Transmedia Storytelling: Based on Henry Jenkins' theory, we designed the visual system to unfold a unified narrative across differentiated media channels, incorporating emerging technologies like AR (Augmented Reality) to enhance immersion.

2.3. AI-Collaborative Design Workflow

To address the complexity of regional branding and improve design efficiency, this study integrates Artificial Intelligence (AI) into the design process, constructing a collaborative "Designer-AI" workflow. As illustrated in our model, this workflow mirrors the three key stages of the design process—Insight, Ideation, and Implementation—transforming the designer's role from a sole creator to a curator of AI-generated possibilities .

2.3.1. Phase I: Insight and Exploration (AI as Analyst)

In the initial research phase, the primary challenge is processing unstructured cultural data.

Designer's Role: Designers are responsible for identifying the core problem scope using SWOT analysis and formulating research hypotheses. [6]

AI's Role: AI tools utilizing Natural Language Processing (NLP) are employed to process vast amounts of textual data. Specific tasks include: (1) Semantic Clustering: Rapidly analyzing user reviews and social media texts to identify high-frequency keywords and user pain points; (2) Trend Summarization: Automating the collection and classification of design trends from multi-domain case studies; (3) Research Assistance: Generating drafts for user interview scripts and questionnaires to streamline the preparatory work.

2.3.2. Phase II: Ideation and Creativity (AI as Generator)

This phase focuses on divergent thinking, where the synergy between human creativity and AI generation is most critical. [7]

Designer's Role: Designers define the emotional narrative (e.g., "Kung Fu culture") and the modular system rules. They act as "Prompt Engineers," guiding the AI to align with specific cultural tones and aesthetic standards.

AI's Role: Generative AI tools (e.g., Midjourney, Stable Diffusion) serve as high-speed creative engines. Tasks include: (1) **Prototype Generation:** Producing a massive volume of 2D/3D visual sketches and style variations based on cultural keywords, significantly lowering the cost of trial-and-error; (2) **Style Transfer:** Experimenting with different artistic styles (e.g., traditional ink painting vs. modern vector art) to visualize potential visual directions; (3) **Opportunity Analysis:** Analyzing semantic clusters to propose potential creative opportunities and risk factors.

2.3.3. Phase III: Implementation and Realization (AI as Simulator)

The final phase shifts to convergence and cross-media adaptability.

Designer's Role: Designers focus on the "last mile" of delivery—refining cultural details to ensure historical accuracy, correcting AI "hallucinations" (e.g., inaccurate period costumes), and finalizing the emotional user experience.

AI's Role: AI facilitates the materialization of the design system. Tasks include: (1) **Multimodal Prototyping:** Simulating the application of IP characters in VR/AR environments or generating dynamic motion graphics; (2) **Automated Reporting:** Visualizing the potential effects of different design iterations to support decision-making.

2.3.4. Comparative Analysis of Roles

This study acknowledges the distinct advantages and limitations of AI in cultural branding.

Advantages: AI excels in data processing speed, cross-domain case analogy, and the rapid generation of diverse prototypes. It effectively overcomes the "blank page syndrome" and expands the breadth of creative exploration.

Limitations: AI lacks deep cultural understanding and logical reasoning. It relies on probabilistic generation, which can lead to issues with data authenticity and lack of aesthetic judgment. Therefore, the "Human-in-the-Loop" mechanism is essential, where the designer acts as the "Cultural Gatekeeper" to verify and refine AI outputs.

2.4. AI-Collaborative Design Practice Path Model

To address the limitations of traditional design efficiency and explore new methodological possibilities, this study constructs an AI-Collaborative Design Practice Path Model (as illustrated in Figure 2 of the original study). This model parallels the "Insight-Ideation-Implementation" stages, explicitly defining the collaborative division of labor between human designers and Artificial Intelligence.

2.4.1. Insight and Exploration Phase

In the initial research phase, the workflow shifts from manual analysis to AI-assisted data mining.

Designer's Role (Problem Definition): The designer is responsible for strategic framing, using SWOT analysis to identify core issues and formulating research hypotheses regarding the brand's value proposition.

AI's Role (Data Processing): AI tools act as analytical assistants. They are utilized to: (1) Rapidly organize logic and generate lists of user pain points; (2) Conduct multi-domain case comparisons to identify benchmarks; (3) Perform semantic clustering on textual data to extract key research themes; and (4) Automatically generate interview outlines and quantitative questionnaires, significantly reducing preparatory time.

2.4.2. Ideation and Creativity Phase

This phase focuses on "Divergence," leveraging AI to expand the boundaries of creativity.

Designer's Role (Concept Direction): Designers initiate the conceptual framework based on emotional narratives and modular system rules. They also manage the co-creation mechanism, organizing government, academic, and public feedback.

AI's Role (Visual Generation): Generative AI serves as a high-speed visualization engine. Its functions include: (1) Semantic Analysis: Summarizing user insights to identify opportunity points and potential risks; (2) Prototype Generation: Producing diverse 2D/3D visual sketches and pattern variations based on cultural keywords; (3) Prompt Engineering: Optimizing text-to-image prompts to explore various stylistic directions rapidly, enabling a high volume of visual brainstorming at low cost.

2.4.3. Implementation and Realization Phase

In the final delivery phase, the focus returns to "Convergence" and precision.

Designer's Role (Experience Control): The designer focuses on constructing immersive cross-media narratives (e.g., VR/AR scenarios) and assessing the emotional impact of the final output.

AI's Role (Simulation & Iteration): AI facilitates the materialization process by generating multimodal prototypes, simulating user interaction scenarios, and producing automated analysis reports to support iterative decision-making.

2.4.4. Comparative Analysis of Human-AI Synergy

Based on the practical application in this study, we analyzed the distinct characteristics of human-AI collaboration (summarized from the study's comparative analysis):

AI Advantages: AI excels in the rapid aggregation of massive information, cross-domain case referencing, and large-scale data processing. Its primary value lies in reducing the cost of trial-and-error and providing rapid trend insights.

AI Limitations: AI lacks authoritative judgment on data authenticity and historical accuracy. It struggles with deep logical reasoning and aesthetic sensibility, often producing "noise" or culturally inaccurate results that require manual verification.

Conclusion: The integration of AI does not replace the designer but elevates their role to that of a "Cultural Gatekeeper." The optimal workflow is characterized by "AI for divergent exploration and efficiency, Human for convergent decision-making and cultural validation".

3. Results and Discussion

3.1. Diagnostic Results

SWOT Analysis The SWOT diagnosis provided the strategic foundation for the visual system.

Strengths: The analysis confirmed that Henan possesses world-class cultural resources, such as the Shaolin Temple and the Longmen Grottoes (“One History of Henan, Half History of China”). [8]Policy support from the “14th Five-Year Plan” provides a strong administrative backing.

Weaknesses: The primary weakness identified was the fragmentation of visual symbols. Existing tourism materials often relied on disjointed photography or generic “antique-style” fonts, lacking a unified visual language that connects different scenic spots (e.g., Anyang Yinxu and Luoyang). [9]

Opportunities: The rise of “Guochao” (China Chic) trends among Gen Z and the maturity of digital technologies (AR/VR) offer new channels for brand engagement.

Threats: Regional tourism brands in China face severe homogenization. Without a unique identity, the “Henan” brand risks being drowned out by similar cultural narratives from neighboring provinces. Based on these findings, we adopted an “SO Strategy” (Strengths-Opportunities) to leverage policy support for building a “Super Symbol” system, and a “WO Strategy” (Weaknesses-Opportunities) to utilize digital co-creation to remedy the lack of a unified system .

3.2. Implementation of the Visual System

Guided by the “Six-Element Path Model,” the design phase yielded a comprehensive modular system:

IP Character Design: Two anthropomorphic characters were created to serve as emotional anchors. The “Kung Fu Elephant” combines the region’s historical abbreviation “Yu” (meaning elephant) with Shaolin martial arts attire, symbolizing strength and vitality. [10]The “Opera Elephant” incorporates costumes from Yu Opera, representing artistic heritage. These characters were designed with open postures to facilitate interaction in digital media.

Symbolic Translation & Library: We developed a vector graphic library covering 15 major cultural themes. Complex artifacts (e.g., the architecture of the Shaolin Temple) were simplified into geometric icons to ensure legibility on mobile screens. A standardized color palette based on traditional Chinese aesthetics (e.g., vermilion, cyan) was established to maintain visual consistency.

Modular Configuration: The system adopts a “lego-like” modular approach. Visual elements-Background Patterns (Cloud/Water motifs) + Core Landmarks (Vector Icons) + IP Characters + Typography-can be dynamically assembled. This flexibility allows the visual identity to adapt to different themes, such as “Kung Fu Zhengzhou” or “World Heritage Tours,” without losing brand recognition.

3.3. Transmedia Application and User Feedback

The visual system was validated through multi-channel applications:

Physical Touchpoints: In the Zhengzhou Metro and bus stations, the modular posters transformed transit spaces into immersive cultural corridors. The high-saturation color blocks effectively captured the attention of commuters.

Digital Interaction: The IP characters were adapted into animated stickers and AR markers for digital guidebooks.

Co-creative Evaluation: Feedback from the “Co-creation Phase” (surveys and focus groups) indicated a significant shift in perception. 85% of younger participants (aged 18-30) found the new IP-driven visuals “more approachable” and “culturally relevant” compared to previous photographic posters. The feedback loop also led to adjustments in the color saturation of the IP characters to better suit outdoor lighting conditions.

3.4. Discussion

The Role of AI in Cultural Design A critical finding of this study concerns the Human-AI Collaboration. By comparing the workflow with and without AI, we observed distinct patterns (see Figure 2 in the original study logic):

Efficiency Gains: In the Ideation phase, AI tools (Midjourney) generated over 100 texture variations and composition drafts in under 2 hours, a task that would take a human team days. This “divergent” capability significantly lowered the cost of trial-and-error.

Cultural Limitations: However, AI demonstrated a “Hallucination” effect regarding specific cultural details. For instance, AI-generated “traditional armor” often mixed elements from different dynasties or cultures (e.g., confusing Japanese samurai aesthetics with Chinese Tang armor).

The “Gatekeeper” Function: This necessitates a new role for designers: the Cultural Gatekeeper. While AI acts as a high-speed generator, the human designer must verify historical accuracy and inject “Shen” (Spirit/Emotion) into the final output. The study suggests that the optimal workflow is “AI for divergence, Human for convergence and cultural verification”.

4. Conclusions

This study addresses the critical challenge of revitalizing regional cultural heritage in the digital age. By integrating the Double Diamond design process with a novel “Six-Element Path Model” (Symbolic Translation, Data-Driven Insight, Modular Design, Emotional Narrative, Co-creative Feedback, and Transmedia Storytelling), we have constructed a comprehensive framework for regional tourism branding. The practical application of this model in the “Henan Brand Project” provides empirical evidence for its effectiveness. Key conclusions are as follows:

Systematic Transformation: The transition from fragmented symbol usage to a modular visual system is essential for combating brand homogenization. The proposed model successfully transformed static historical artifacts into dynamic, adaptable visual assets (such as the “Kung Fu Elephant” IP), significantly enhancing brand recognition across diverse media channels.

Emotional and Cultural Resonance: Anthropomorphic IP characters and narrative-driven designs serve as effective bridges between ancient heritage and modern youth culture (Gen Z). The study confirms that emotional storytelling combined with

transmedia application fosters a deeper sense of cultural identification than traditional, serious historical presentations.

The Paradigm of AI Collaboration: Our exploration of AI tools reveals a new design paradigm: “AI for Divergence, Human for Convergence.” AI significantly accelerates the exploration of visual possibilities (e.g., generating pattern variations), reducing the cost of trial-and-error. However, the role of the designer must evolve into that of a “Cultural Gatekeeper” to correct AI hallucinations and ensure historical accuracy.

Implications and Future Work: The theoretical contribution of this paper lies in providing a replicable “Culture-to-Visual” translation mechanism. While this study focused on the Central Plains culture of China, the “Six-Element Path Model” offers a generalized blueprint applicable to other regions globally that possess rich history but lack modern brand power.

However, this study has limitations. The validation was primarily conducted within a specific cultural context (Henan), and the AI tools used are rapidly evolving. Future research should test this framework in cross-cultural settings to verify its universality and further investigate the potential of real-time, AI-driven interactive visual systems in immersive tourism experiences.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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